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PORTUGAL'S TOMATO PROCESSING INDUSTRY

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Foreword

Portugal's penetration of the world market for canned tomato paste has been a rapid and impressive one. Today, after a relatively short interlude of initial growth, it stands as the leading foreign supplier to many countries, including the United States. Its increasing participation in this market has naturally attracted the attention and interest of a number of groups within the U.S. producing and marketing scene.

The purpose of this report is to describe the tomato processing industry of Portugal and the factors underlying its growth in the world market. The author is indebted to members of the Portuguese Government and industry for their help. Special appreciation is extended to Eng. Agr. Antonio Falcao de Campos, a member of the U.S. Agricultural Attaché's staff in Lisbon.

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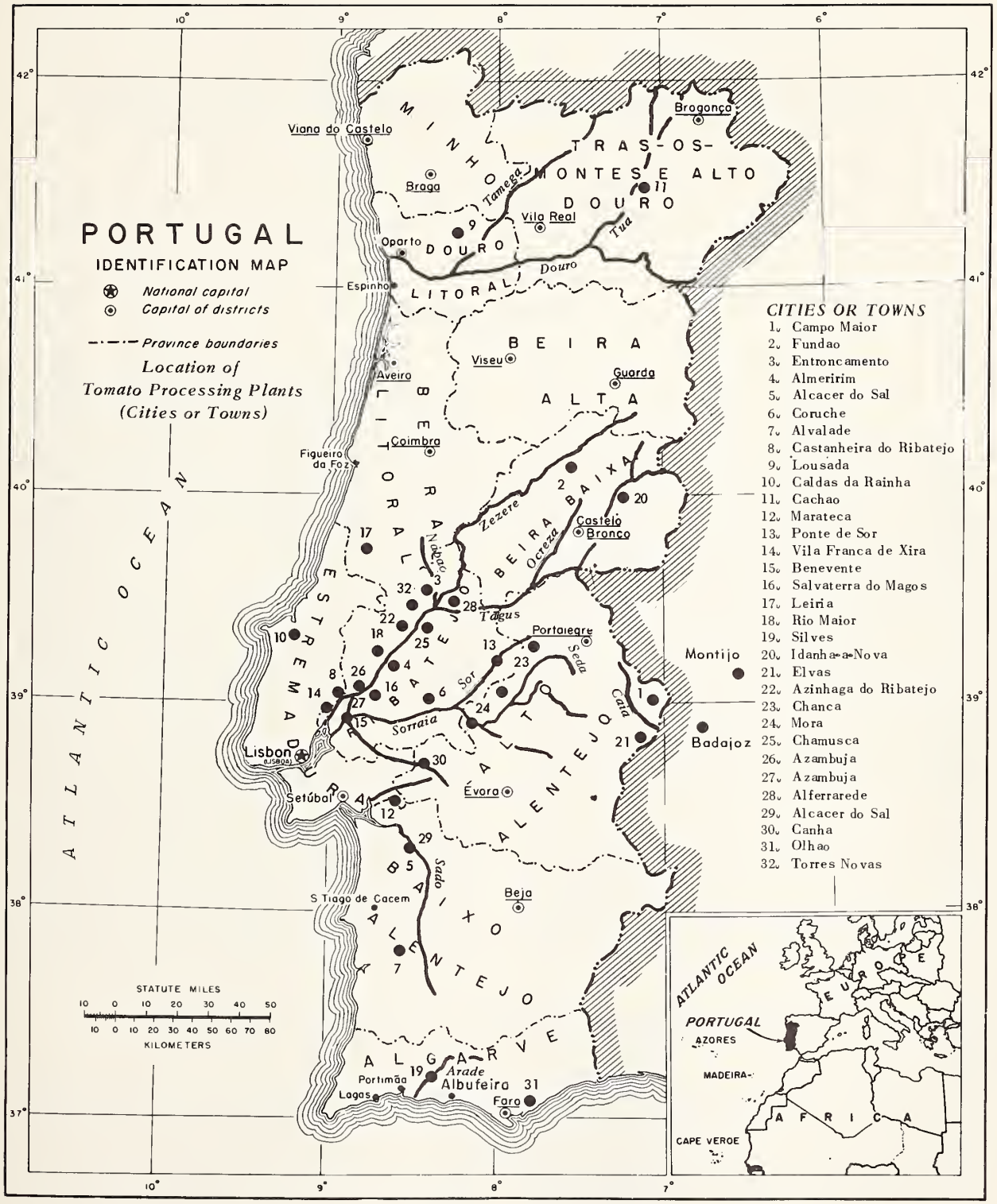
PORTUGAL
IDENTIFICATION MAP
National capital
Capital of districts
Province boundaries
Location of
Tomato Processing Plants
(Cities or Towns)
CITIES OR TOWNS
1. Campo Maior
2. Fundao
3. Entroncamento
4. Almeririm
5. Alcacer do Sal
6. Coruche
7. Alvalade
8. Castanheira do Ribatejo
9. Lousada
10. Caldas da Rainha
11. Cachao
12. Marateca
13. Ponte de Sor
14. Vila Franca de Xira
15. Benevente
16. Salvaterra do Magos
17. Leiria
18. Rio Maior
19. Silves
20. Idanha-a-Nova
21. Elvas
22. Azinhaga do Ribatejo
23. Chanca
24. Mora
25. Chamusca
26. Azambuja
27. Azambuja
28. Alferrarede
29. Alcacer do Sal
30. Canha
31. Olhao
32. Torres Novas
ATLANTIC OCEAN
MINHO
TRAS-OS-MONTES E ALTO DOURO
DOURO LITORAL
BEIRA ALTA
BEIRA BAIXA
ESTREMADURA
RIBATEJO
ALENTEJO ALTO
ALENTEJO BAIXO
ALGARVE
Viana do Castelo
Braga
Bragança
Vila Real
Oporto
Espinho
Aveiro
Viseu
Guarda
Coimbra
Figueiro da Foz
Castelo Branco
Portalegre
Lisbon
Setúbal
Évora
Beja
S Tiago de Cacem
Portimão
Lagos
Albufeira
Faro
Montijo
Badajoz
Tamega
Tua
Douro
Zezere
Ocreza
Nabão
Tagus
Sor
Seda
Caia
Sorraia
Sado
Arade
STATUTE MILES
KILOMETERS
ATLANTIC OCEAN
EUROPE
PORTUGAL
AZORES
MADEIRA
CAPE VEROE
AFRICA

Portugal's Tomato Processing Industry

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Introduction

An unrelenting dedication of many to a singular purpose has produced one of the most outstanding achievements in recent horticultural experience. This, simply, is the story of the tomato processing industry of Portugal. The concerted drive of both industry and government to launch a product with badly needed export capabilities not only has met with success, but has provided an important stimulus to the country's agricultural community.

Today, Portugal—no larger than the State of Indiana—has become a key factor in the international market for canned tomato paste. Within a span of only a few years, it has catapulted into position as top supplier in many markets, displacing other historical exporters by a widening margin.

A large measure of this success can be attributed, without question, to Portugal's comparative advantage in labor and raw-product costs. But its reputation in the world market has not rested upon price alone. The successful drive to improve quality and production techniques has been at least equally important. Intensive experimentation in plant breeding and cultural practices, the injection of cannery controls into the production of the raw product, and the application of modern processing techniques and equipment have all played a vital role.

Looking to Portugal's future, a nucleus for further growth does exist. Here, irrigation can open up new areas and expansion in others. At the same time, there are a few ominous signs on the horizon. As so often is the case, success breeds rivalry. Portugal's spectacular accomplishments have truly created a model of international envy. A number of countries who are also badly in need of export earnings are now attempting to emulate Portugal's success with tomato processing industries of their own. Another problem rests in prospects that the labor supply will shrink further and wages consequently increase. Last, but not least, the high degree of dependence by the Portuguese tomato canneries on a single product—canned tomato paste—places the industry in a precarious position should an oversupply develop in the world market for this product.

This report, based on the author's recent trip to Portugal, as well as on data from the office of the U.S. Agricultural Attaché in Lisbon, describes Portugal's tomato processing industry. A similar report on tomato processing in Spain and Italy is planned.

Present Position in the International Market

Portugal's success in the world market for tomato paste has been a very recent achievement. Though the volume exported each year started moving upward slowly during the latter half of the 1950's, the real acceleration did not begin until 1963, when exports more than doubled those of a year earlier. Since then, each successive year has seen a new high established. In 1966, exports approximated 163 million pounds—a sixteenfold increase over the average of the late 1950's and more than double the volume of 1963.

Although its sales of tomato paste have widened to include many markets, Portugal has concentrated heavily on three important ones—the United Kingdom, Canada, and the United States—where demand for imported paste has risen markedly, especially in the last 3 years as shown in the import (total) series below:

Year	United Kingdom	United States	Canada
	Mil. lb.	*Mil. lb.*	*Mil. lb.*
1964	97.4	13.2	20.3
1965	118.8	24.1	40.0
1966	144.4	50.0	47.6

And 1967 promises to show even further growth. For example, imports of tomato paste into the United States during the first 10 months of 1967 totaled 99.2 million pounds, already a new record.

Portugal has been the primary beneficiary of the increase, displacing Italy—traditionally a leading supplier of these markets—by a sizable and widening margin. By 1966, Portugal held the No. 1 supplier position in all three.

Despite impressive gains in the U.S. and Canadian markets, the United Kingdom continues as the leading buyer of Portuguese paste, consistently taking about one-half of Portugal's exports. Portugal became the United Kingdom's leading supplier in 1964 and has since maintained this position. In both 1965 and 1966, Portugal accounted for about 56 percent of the total imports into the United Kingdom. In contrast, Italy's share has dropped sharply. In the early 1960's Italy commanded 70 percent or more of the U.K. market. By 1966, its share had fallen to 23 percent.

Portugal's position as No. 1 supplier in the two important markets of North America has been a more recent one. In the United States, it became the leading foreign supplier for the first time in 1966, contributing 21 million pounds or 42 percent of the total volume imported for consumption during that year. In the Canadian market, Portugal attained No. 1 status in 1965, when it accounted for 59 percent of the total imports. In the following year, Portugal increased this commanding position by a substantial margin, accounting for two-thirds of total Canadian imports.

Total export earnings for Portuguese tomato paste were at an alltime high of US$18.7 million in 1966. This compares to US$14.0 million a year earlier and US$2.4 million in 1960.

Development of Tomato Culture for Processing

A large measure of Portugal's recent success in international markets can be attributed to intensive dedication and close cooperation on the part of both government and industry in tailoring production of tomatoes to the needs of processors. This has been accomplished through extensive experimentation in breeding varieties most desirable for production of paste, as well as striving for optimum yields through application of improved cultural techniques.

Production of tomatoes strictly for canning was almost unknown in Portugal prior to about 1946. Growers catered at random to both the fresh market and processing. Varieties were far too numerous for rational use in processing, and the majority were unsuitable for canning. Furthermore, growers frequently had difficulties in their dealings with processors, who failed to keep their promises to buy all tomatoes contracted for when heavy yields flooded the market. The many protests lodged with the government finally led to a decree that all future contracts with growers had to be examined and approved by the National Fruit Board [1] and would henceforth be enforced strictly as legal documents.

Recognizing the need to reorient the varietal structure as well as to encourage industrial use of tomatoes, the National Fruit Board in 1946 launched a study devoted to the selection of improved varieties for processing. A large number of varieties were planted in experimental plots with seed obtained abroad. The first findings led to the tentative selection of about 12 U.S. varieties. This work continued into 1948 and 1949, with additional varieties of Canadian, French, Italian, and English origin. Finally, the Fruit Board narrowed its selection to about six varieties—Marglobe, Rutgers, Bonny Best, Earliana, Greater Baltimore, and Victor.

Later, as the processing of tomato paste began to expand, the need for further reorientation of varieties and cultural practices became increasingly apparent. Following appeals from tomato processors, the National Fruit Board and the Director General of Agricultural Services in 1957 developed a long-term plan which was to become the basis of modern day tomato culture in Portugal. The plan of attack was essentially fourfold: (1) To study the vegetative behavior and the technological characteristics of the different varieties under local conditions; (2) to develop improved varieties or strains, as well as the propagation of seed; (3) to seek improvements in cultural techniques; and (4) to work directly with growers, acquainting them with new varieties and cultural techniques.

The investigative work continued vigorously after inception of the initial plan. Plants and seed were imported from all parts of the world. The methodology and results of research conducted by experiment sta-

[1] The National Fruit Board (Junta Nacional das Frutas) is a quasi-government body composed of civil servants and representatives of various industry sectors. It acts as a coordinator between government and industry and has been extended and exercises considerable regulatory powers.

tions and colleges in the United States and elsewhere were carefully studied. A leading international user of tomato paste, which was later to become active in production of paste within the country, played a very decisive role in this endeavor. Planting material and technicians of many specialties were brought into the country from the company's experimental farms in the United States and Australia. This firm is often referred to as the founding father of modern day tomato culture in Portugal.

In addition to the experimental plots of individual canneries, trial studies have been carried on continuously in experimental fields scattered throughout the country since the late 1950's under the guidance of the regional organizations of the Director General of Agricultural Services and in close cooperation with the National Fruit Board and the Instituto Superior de Agronomia, Portugal's only agricultural college. All facets of production continue to be examined. Varieties recommended previously are continuously compared with results of new trial selections from the standpoint of fruiting habits, yields, resistance to diseases, and internal characteristics. Tests are made to determine the proper application of fertilizers, irrigation water, and sprays, as well as crop rotation practices.

Today, the varietal composition of the Portuguese tomato crop for processing differs markedly from that of 20 years ago. Most, if not all, of the original selections made by the National Fruit Board in the late 1940's have faded from the picture. And, with the increased tempo of experimentation, a number of varieties introduced since the launching of the 1957 plan have already become casualties. Though the pear-shaped tomato popular in the nearby producing areas of Spain and Italy has also gained prominence in Portugal, the round-type tomatoes continue dominant, accounting for close to three-fourths of total output of processing tomatoes. The varieties now produced in Portugal are identified, for the most part, by numbers rather than by proper names. At the present time, some of the prominent varieties are: Round-type ES 24, ES 58, H 1370, and H 1548; pear-shaped Roma and AP 134. Many strains have been or are being developed from these basic varieties.

Growing Operations

Producing Areas

Although some processing tomatoes are grown in a few scattered locations in the north, the major producing areas are located in the southern half of Portugal. Here, climatic conditions are highly conducive to tomato production. The summers are long, hot, and virtually free of rainfall. Hence, all the production in this region must be irrigated.

The largest single producing area is along the banks of the Tagus River (Rio Tejo). This area begins a short distance from Lisbon and extends in a northeastward direction along the Tagus for about 60-70 miles. Here, the water for irrigation is drawn by pumps from the river. Although an official tally of tomato acreage in this locality is not available, reports suggest that it accounts for at least one-half the total acreage planted to processing tomatoes.

Another important center of production is in the Sorraia Valley, which lies immediately to the south of the Tagus River. This is a relatively new area opened to farming after an irrigation project was completed in 1959. Since then, tomato acreage has risen rapidly. In 1966, about 6,500 acres were under cultivation in the Sorraia Valley, and further expansion appears probable.

Other production centers are in the Province of Estremadura, immediately north of Lisbon, and in the newly irrigated areas of the Sado Valley, which lies to the southeast of Lisbon, and in the Caia Valley, along the eastern border of the country near the city of Elvas. Some tomatoes are also produced in Algarve, the most southern Province in the country.

Acreage and Production

The total area devoted to production of processing tomatoes has increased rapidly, especially since the turn of the 1960's. As indicated on page 14 in the table, a substantial expansion has occurred in each consecutive year since 1959. The estimated production for 1967 marks more than an elevenfold increase over that of 1960.

Size of farms

The size of the individual holdings devoted strictly to the production of processing tomatoes varies widely, ranging from less than 1 acre to as many as 1,500 acres (one unconfirmed report indicated holdings as high as 2,000 acres). The larger tracts are operated by the canneries. The small family-type operations, which reportedly account for a large part of annual production, range from about one-half acre to 2 or 3 acres.

Most of the land used for production of tomatoes is leased. The general range of rental charges is from $70 to $100 per acre, with some locations as high as $140-$150. In a few instances, the lessee may be a canner who in turn subleases the land to a number of growers.

Yields

Extensive experimentation in new varieties and cul-

tural practices has paid dividends in grower yields. As can be observed in the following tabulation, yields have trended generally upward since the mid-1950's. The setback in 1966 resulted from exceptionally cool weather and rains in late September and early October.

Year	*Metric tons per hectare*	*Equiv. short tons per acre*
1956	25.2	11.2
1957	29.6	13.2
1958	31.8	14.2
1959	31.9	14.2
1960	30.9	13.8
1961	25.1	11.2
1962	33.7	15.0
1963	36.1	16.1
1964	35.8	16.0
1965	41.5	18.5
1966	32.6	14.5
1967 [1]	40.1	17.9

[1] Preliminary.

A few years ago, a report indicated that at the then current level of prices paid to growers—$17.46 per short ton for first quality and $12.70 second quality—an equivalent per acre yield of about 13 short tons appeared to be the average "break-even" point. No definitive information was uncovered to suggest this point has changed appreciably since that time. The grower prices have also remained unchanged (see later section on grower prices).

Many individual experiences of higher yields can be cited. In 1966, some of the better growers were reported to have averaged between 29 and 34 short tons per acre, with a few exceptional cases as high as 40 tons.

A study published by the National Fruit Board in 1964 revealed the following yields in experimental plots:

Variety	1961 *Short tons per acre*	1962 *Short tons per acre*	1963 *Short tons per acre*
H 1370	26.7	31.2	41.0
ES 58	27.3	29.2	41.2
ES 24	26.1	—	42.9
Roma	24.4	26.1	40.0
Ace	21.0	23.7	29.7

To increase the profitability of the growers' operations through higher yields, personnel of the government's extension service and the fieldmen of the canneries work closely with growers from planting to harvest. They provide on-the-spot technical advice on the application of fertilizers, insecticides, etc. In addition, a number of canneries provide special incentives by distributing premiums or prizes for quality and high yields at the conclusion of the season.

Although the application of fertilizers varies according to location, the use of 7–21–21, applied at a rate of about 535 pounds per acre, appears most common. Two light coats of nitrogen, 20.5 percent, are applied later during the growing season.

At the present time, no definite industry pattern of crop rotation has been established since much of the area has just come into production through irrigation. In some of the more established areas, the rotation practice has varied from 2 to 3 consecutive years in tomatoes.

Labor costs

The small farms are mostly family-type operations, with all of the labor performed by family members. In the larger tracts where outside workers must be employed, women make up a large portion of the labor force. The cost of field labor, depending upon location, ranges from about $0.85 to $1.05 per day for female workers and $1.75 to $2.00 for male laborers. The length of the work day generally varies from 8 to 10 hours.

Although the bulk of the labor supply comes from nearby villages, workers are drawn from other areas of Portugal, particularly during the peak of the harvest season.

Harvesting operations

Harvesting of tomatoes for processing begins in late July and continues through September or early October, depending upon the weather. The peak of the harvest season extends from about mid-August to mid-September.

All tomatoes are harvested by hand and placed in small hamper baskets. These, in turn, are dumped into field crates which have been furnished by the cannery. The net content of these crates averages about 25 kilograms or 55 pounds each. The harvesting is performed mostly on a daily-wage basis. Assuming the average worker harvests from 30 to 35 crates per day, the cost of labor at the present wage level would be about $2.00 per short ton.

Six to seven pickings per field are being advocated as the preferred practice from the standpoint of achieving optimum maturity and yields. Since most of the tomatoes are used in the manufacture of paste, a high degree of ripeness is an important characteristic.

Grower prices

Except in those instances where the canner produces his own output, cannery procurement of tomatoes is accomplished by means of a contract with growers. The contract price is established through annual negotiations between canners and growers with approval of

the National Fruit Board. This price then becomes applicable on an industry-wide basis.

Prices paid to growers are scaled according to the three classifications established for processing tomatoes: (1) First quality, (2) second quality, and (3) rejects. Despite the increased activity in export, the basic grower prices have remained constant for many years, dating back at least to 1960. These prices have been as follows:

First quality	55 centavos per kilogram or $17.46 per short ton
Second quality	40 centavos per kilogram or $12.70 per short ton

No payment is made to growers for deliveries failing to meet second quality.

Grading is done at the cannery, generally by two individuals, one representing the grower and the other, the canner. Any disputes are arbitrated by officials of the National Fruit Board. The regulations promulgated by the Board permit the canner to refuse acceptance of any lot containing less than 30 percent of first-quality tomatoes or more than 10 percent of rejects.

Cannery controls

It is clearly evident that Portuguese canners exercise a very high degree of control over the production of tomatoes for processing and are integrating their operations more and more—either directly or indirectly—into the production function.

Implementation of controls in the production sector has taken two forms. First, a number of canners have undertaken the entire production and harvesting of at least part of their raw-product requirements. One firm is reported to be producing about two-thirds of its raw-product needs. Mechanization is an outstanding characteristic of these operations. Machines are used wherever possible, with harvesting the one notable exception, as a substitute for labor. Should the labor supply continue to decrease as it has in the recent past, this practice is expected to become more widespread.

A second and effective means of implementing production controls is through the grower contract. As indicated previously, the cannery procurement of tomatoes is made through a contract with growers. This contract normally specifies not only the price, but also varieties to be planted and delivery dates. Most of the planting stock, in the form of tomato transplants, is furnished by the canneries, thus ensuring direct control over the varietal composition of the affiliated grower's crop. These transplants are produced in nurseries usually located on the canner's premises.

In addition, the cannery often performs all the basic functions that can be done through the use of machinery, i.e., preparation of the land for planting, fertilizing, and planting. The affiliated grower then assumes responsibility for all functions requiring the use of hand labor, such as weeding, pruning, and harvesting. Charges for all supplies and mechanical aids performed by the canner are customarily deducted from the basic grower price as specified in the contract. The grower agrees to deliver all his tonnage to the canner without quantitative limitations.

Despite the industry-wide uniformity of grower prices, competition among canners for the raw-product supply is intense. Various means are employed to attract growers to their fold. This is often accomplished by advancing operating capital to growers, charging nominal amounts for services rendered, or furnishing tomato plants and supplies on a reduced-cost basis.

Processing Operations

Number and location of plants

Portugal's growth in the international market for tomato paste is mirrored by the rapid expansion in processing capacity. In 1963, only nine firms were engaged in tomato processing. Four years later the number had risen to 30 firms operating 32 plants. In addition, the operating capacity of a number of plants has been enlarged on one or more occasions during the short time they have been in existence.

The majority of processing plants are located in the southern half of the country, within or near the major tomato producing areas. The largest concentration of plants—12 in number—extends from Lisbon northeastward along the Tagus River for a distance of about 60-70 miles. Another important group lies within or near the Sorraia Valley, located to the South of the Tagus River. The remainder are in scattered positions as indicated on the map accompanying this report.

Size of plants

Most of the plants are moderately large by U.S. standards. The operating capacity of the largest ones—about three or four in number—has been about 26 million-30 million pounds of paste in a normal season. At the other extreme, the very small canneries are reported to have a capacity of about 6 million-11 million pounds each.

The number of processing lines commonly ranges

Tomatoes, packed in wooden crates in the fields, arrive at plant to be processed into paste, puree, and other products.

from about 5 to 8, with 2 to 4 evaporators per plant. There are exceptions, of course, on both sides of this range. The capacity of the evaporators varies widely. One of the plants observed had two evaporators, each with a raw-product capacity of 220 metric tons per 24-hour day. Another plant was reported to have an evaporator capable of handling 700 metric tons of tomatoes per day, with a finished-product output of about 125 metric tons of paste, 28-30 percent basis.

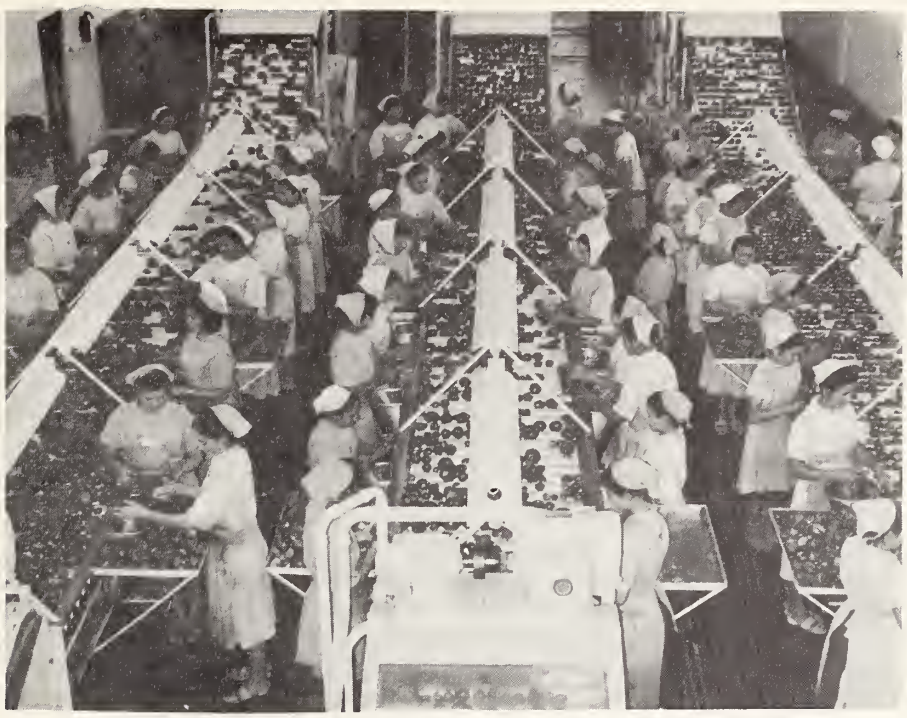
All of the major operations are generally housed in one massive building, including a large warehousing area. In addition, most of the plants are equipped with their own quality-control laboratories.

An immediate and striking impression of Portuguese processing facilities is the very apparent respect for cleanliness and sanitation in both interior and exterior parts of the plants. The walls and floors of many of the plants are tiled, and the interiors are well lighted with large windows.

Ownership

Ownership of the individual tomato processing plants appears to be largely Portuguese. One notable exception is the controlling interest in two plants acquired in 1965 by a wholly-owned Dutch subsidiary of a U.S.-

Aerial view of a tomato processing pl



Tomatoes are washed and checked over as they pass along on conveyor belts. In these plants, most employees are women. Note abundance of light, clean working areas.

based food processor. Another plant is reported to have some French capital.

The industry is a composite of the normal organizational units—single proprietorships, limited partnerships, grower cooperatives, and corporations. A number of the older firms, organized initially as limited partnerships, have reorganized as corporations, some with a marked expansion in the capitalization base. There are at the present time two grower cooperatives.

Not all firms are wholly autonomous units. Interlocking relationships, managerial and financial, appear to be a common characteristic. One exporting corporation, which is reported to account for one-third or more of the industry's sales, either owns or has a controlling interest in a number of firms it represents in export. Both the grower cooperatives are headed by the same president.

The industry unquestionably has been a prosperous one. It is claimed that some of the plants have been fully amortized in 4 to 5 years.

Machinery and equipment

Since the majority of the plants are relatively new, they are equipped with the latest type of machinery. With but few exceptions, the machinery is predominately of Italian origin. A limited amount of specialized equipment is imported from Switzerland, France, and Denmark. Despite the low cost of labor, many of the cannery operations are highly automated. Forklift trucks, conveyor belts of all descriptions, automatic labeling machines, etc., are common.

A number of the larger canneries have their own can-making equipment. The cans are generally produced during the off-season and stored on the premises. A part of this output is often sold to the smaller canneries. A number of small canners have formed an association specifically for the purpose of procuring cans on a volume basis from a local manufacturer at more attractive prices.

Most, if not all, of the cans used in packing tomato products are manufactured from imported tinplate. England is by far the primary source, with only limited quantities imported from other sources.

Labor costs

The cost of cannery labor varies according to location, ranging from about $0.85 to $1.25 per basic 8-hour day for unskilled female laborers, with provisions for overtime pay. Workers in the canneries are mostly women. Men are employed only when special skills or heavy manual tasks are involved. Their wages vary according to the degree of specialty.

There are signs that the labor supply situation in Portugal is tightening. Although the general level of wages has shown inflationary tendencies over time, it still continues well below that of nearby countries in Northern Europe, and industrial development has lagged behind considerably. An increasing number of

male workers are migrating to industrialized areas of Northern Europe where wages are far more lucrative. This is taking a heavy toll on the male labor force which, in turn, is placing added pressure on local wages. In addition, a fairly high percentage of the young male population is commandeered for military service within the country and in the overseas Provinces.

The growing shortage of male workers is already apparent in the tomato industry. As indicated above, a very large share of the workers in both the fields and canneries are women. The prospect of further shrinkage in the labor force has been one of the more compelling reasons for the high degree of automation now so evident in the production and processing operations.

Tomato-product line

With but few exceptions, Portuguese tomato processors have oriented their operations almost exclusively to the production of canned tomato paste. Other tomato products—canned whole tomatoes, sauce, juice, ketchup, etc.—are but a minor part of the total industry output at the present time.

Tomato paste.—The growth in production of tomato paste has closely paralleled that of exports of this product. As noted in the following tabulation, a large increase in the annual pack has been registered in each successive year since 1959. The rate of growth during the interval from 1959 to 1967 averaged 51 percent annually, with the individual year-to-year changes ranging from 22 percent to 103 percent.

Year	*Metric tons* [1]	*Equiv. mil. lbs.*
1956	3,000	6.6
1957	4,600	10.1
1958	9,600	21.2
1959	5,800	12.8
1960	9,800	21.6
1961	13,300	29.3
1962	27,000	59.5
1963	32,900	72.5
1964	48,900	107.8
1965	73,800	162.7
1966	91,450	201.6
1967 [2]	140,000	308.6

[1] Expressed in equivalent tons of double-concentrated paste, 28–30 percent. [2] Preliminary.

Although Portuguese tomato paste is processed in varying degrees of concentration, the bulk of the annual output closely approximates 28–30 percent. It is estimated that about 80 percent of the export sales in recent years has been in institutional sizes, namely the 5-kilo and 3-kilo (No. 10) cans. Exports to the United Kingdom and the United States are predominantly of these sizes. The 5-kilo can moves heavily to manufacturers of soups and other food products. The wholesale trade in the United States in its catering to such institutional users as hotels and restaurants continues to show a marked preference for the 3-kilo (No. 10) container.

In contrast to the heavy movement of institutional sizes to the United Kingdom and the United States, shipments to the Canadian market are largely of consumer sizes, i.e., the small sized tins sold at retail. The 5½- and 6-ounce cans have been the most popular in this group and are generally packed 48 cans per case. Buyer labels were observed on a number of lots destined for Canada. A number of the canners interviewed expressed the belief that the pack of consumer sizes will command an increasing share of annual output as the quality of Portuguese paste becomes increasingly established in world markets.

A large part of the export sales are made in the forepart of the year, well in advance of the packing season. This is done primarily so that processors, particularly the newer ones, may qualify for loans to acquire operating capital for the oncoming pack year. Portuguese banks require that a processor present evidence of firm sales before operating capital is advanced. It was reported that in some instances up to 60 percent of the estimated output was sold prior to the packing season.

Surplus inventories of tomato paste at the end of the marketing year have not to date posed a problem for Portuguese canners. In fact, the only inventory problem has been the momentary inability of some canners to fill their sales commitments, as happened in the 1966 season when the pack fell below earlier expectations due to adverse weather. Because of the high percentage of sales made in advance of the packing season, the smaller output forced a number of canners to prorate sales or seek supplies elsewhere.

Canned whole tomatoes.—A number of the canneries pack canned whole tomatoes, but generally only one processing line within the plant is devoted to this product. A fairly wide array of sizes is used, among which the more prominent are the 1-kilo, ½-kilo, and 15-ounce cans.

Although whole-tomato pack statistics are not available, their position among tomato products can be gaged by the level of recent exports. In contrast to the 163 million pounds of paste exported in 1966, exports of canned whole tomatoes approximated 7.1 million pounds or an equivalent of about 237,000 cases, basis 24 No. 2 cans. This was about double the volume of the preceding year, when the product first showed some signs of growth.

Of the volume exported in 1966, the United Kingdom was by far the principal destination, accounting for about 70 percent of the total. The United States

and Canada were the next largest markets, taking 16 percent and 4 percent, respectively.

The enthusiasm a few years ago for this product appears to have subsided somewhat. Though further growth is probable, a number of canners indicated a reorientation of varieties, as well as of processing equipment, would be needed to effect an appreciable expansion. Others felt that their competitive advantage would be much lower than for canned paste since some of the larger competitors in other nearby countries have installed very modern and fully automatic tomato peeling machinery.

Other tomato products.—One of the newer Portuguese plants has devoted its entire operations to the production of tomato powder for the export market. Only two canneries were identified as producing tomato juice. Most of this juice is packed in institutional sizes (heavy to 5-kilo tins) and moves into export, particularly to the United Kingdom for use by the bottling trade. A very limited amount of juice is packed for the domestic market, either in bottles or very small-sized tins. Like juice, the production of ketchup is still in its infancy. Only one firm was identified as producing this item.

A medium tomato puree is also produced. Exports of this item have varied between 7 million and 19 million pounds in recent years, with the United Kingdom again by far the principal recipient.

Diversification

Conversations with Portuguese tomato canners reflected recognition of the need for diversification into products other than tomatoes. Implementation of this objective, however, has been quite limited. Some of the larger and older plants have extended their operations into other processed vegetables and fruit juices, but these plants are still in a minority.

A notable exception to the lack of diversification is a grower cooperative at Coruche. This cooperative, though heavily involved in the production of tomato paste, has extended its operations to other commodity lines, namely rice milling, wine production, and dehydration of forage crops.

Government Controls and Assistance

Controls

One of the important measures of control relates to the entry of new processing firms. No plant can be constructed or operated without a license issued by the government only after approval from the National Fruit Board. This does not, however, place any restrictions on further expansion within a plant already licensed.

In the area of quality, the National Fruit Board exercises regulatory powers over both the raw product and the finished product. As indicated earlier, three classifications have been established for processing tomatoes (first quality, second quality, and rejects), and these provide the basis for payment to growers. An unofficial translation of the current regulations, which define the requirements of each classification and the sampling procedures, is in the Appendix to this report.

The responsibility for the second area of quality control—i.e., for the finished product—lies with the "Laboratorio de Tecnologia e Verificacao Commercial," which is under the immediate jurisdiction of the National Fruit Board.

National regulations governing the exportation of tomato products require that the canner or exporter request "commercial verification" of the product before it moves into export. This involves a determination by the laboratory that the product conforms to the national regulations, and no lot can be exported without a certificate of clearance.

The "verification" of the finished product includes examination of qualitative aspects such as color, taste, mold count, and degree of concentration. In addition, containers must be examined for defects. The national regulations permit the addition of coloring matter up to 0.5 percent, and the containers or cans must accordingly carry a "color added" marking.

An unofficial translation of the current regulations applicable to tomato products is also contained in the Appendix.

Assistance

In addition to technical assistance and experimentation in the area of tomato culture described earlier in this report, the government has extended a number of benefits to facilitate development of the tomato processing industry. Among the more important has been the duty exemption on imported processing machinery. A drawback provision has also been established for the duty on imported tinplate; upon exportation of the finished product, a full drawback of the duty is made.

The author found no evidence that the government subsidizes exportation of tomato products other than through the drawback on imported tinplate.

Medium- to long-term loans at low interest rates have also been made available to the industry. The present basis for agricultural credit stems from legislation enacted in 1947. Implementation of this legislation established a Fund for Improvement of Agriculture

whereby loans could be made to farmers for agricultural investments. The interest rate varies from 2 to 5 percent, depending upon the nature of the investment, with the loan repayable over a period of not less than 5 and not more than 30 years. Loans are permitted for various types of activities, including construction of processing plants for agricultural produce and development of existing and new irrigated areas.

Irrigation Developments

In contrast to the relatively moderate-to-heavy precipitation in the more mountainous areas of northern Portugal throughout the year, rainfall in the central and southern parts of the country is confined mostly to the winter months. Here, the long summers are dry and hot. Recognizing the vital need for the further extension of agriculture in this area, the government has launched several sizable irrigation projects. Some of these have been completed, and others are now in the stages of completion.

Tomatoes are one of a number of commodities that have already benefited from the newly acquired supplies of irrigation water, and further gains are highly probable. The rapidity with which new land has been opened up to the production of processing tomatoes is exemplified by the irrigation project in the Sorraia Valley. As indicated earlier, this area lies immediately south of the Tagus River. The Sorraia project was started in 1952, and by 1959 the two dams serving the Valley—the Montargil and Maranhao—were completed. Acreage devoted to processing tomatoes increased rapidly thereafter. In 1960, there were only about 460 acres of tomatoes under cultivation, but by 1966 acreage had risen to nearly 6,500 acres, representing slightly over one-fourth of the total cultivated area (about 23,500 acres) in the Valley. The potential for all crops in this area is placed at nearly 38,000 acres. In 1966 tomato acreage ranked second only to rice, which commanded 31 percent of the total.

All users of irrigation water supplied through the Sorraia project must belong to an association, "Associacao de Regantes e Beneficiarios do Vale do Sorraia." This association is responsible for the administration of the irrigation project under the general guidance of the government. In addition to a small fee assessed equally per hectare, members are charged according to the volume of irrigation water used. This assessment is determined at the present time by the membership of the association. In 1965 the assessment per equivalent acre-foot of water utilized was as follows:

	U.S. dollars
Rice	0.95
Forage crops	0.43
Tomato and other horticultural crops	1.72
Industrial use	6.48

Another more massive irrigation scheme is the so-called "Plano de Rega do Alentejo." The overall plan calls for eventual irrigation of 170,000 hectares (about 420,000 acres) of land through construction of a network of dams and canals in the Provinces of Alto (Upper) Alentejo and Baixo (Lower) Alentejo, which lie to the east and south of Lisbon. Total cost of implementing this irrigation plan is tentatively estimated at 5,270,000 contos (about US$184 million).

The first phase of the plan is nearing completion. Of the four dams scheduled for this phase, two have already been completed: The Divor (near Evora, in the central part of the Alentejo Region) and the Caia (near Elvas, in the northwest part of the region along the Spanish border). A third, the Roxo, is expected to be inaugurated in 1968, and the fourth and final one, the Mira, is not expected to be officially opened before mid-1969. Both of these are located in the southern part of the region.

The projected irrigation area to be serviced by the four dams is as follows:

	Hectares
Divor	476
Caia	7,400
Roxo	4,960
Mira	12,000
Total	24,836

This is equivalent to about 61,100 acres.

The Caia Dam, inaugurated in July 1967, took 4 years to complete and was financed in part by funds from a West German bank under the terms of a cooperative agreement between the two countries. The total cost of the Caia—including the dam, main canals, expropriations, and other expenses—was about 230,000 contos (US$7.0 million). In addition, it is anticipated that at least another 130,000 contos (US$4.6 million) will be needed for construction of secondary canals, land leveling, drainage, electrification, etc.

Of the projected total of 7,400 hectares to be irrigated by this dam, government officials believe that about 5,000 can be brought under irrigation quite rapidly. The Secretary of State for Agriculture, in his speech at the dedication ceremonies, outlined anticipated increases in production for a number of the major crops. In the case of tomatoes, he indicated the possibility of an increase from the present tonnage of 16,500 metric tons to 66,300.

The Competitive Situation

The extent to which Portugal's output and exports increase in the years ahead will, of course, depend to a very large extent upon world demand and supply.

Although no specialized studies have been published, there is every reason to believe that world demand for processed tomato products is growing, but the magnitude of this growth can only remain open to speculation at the present time. Nevertheless, many food products containing tomatoes have been gaining in popularity. For example, use of ketchup, which has been a staple item of long standing in the American household, is now increasing in popularity not only in Western Europe but, surprisingly, even in the Orient. The famed pizza appears to have become something more than a temporary fad with the American palate. Annual packs of tomato soups, sauces and special condiments, baked beans, etc.—all containing tomatoes—are reportedly moving upward. Increasing prosperity and travel have done much to stimulate demand for international cuisine. Italian-style cuisine, with the tomato basic to its fame, is no exception.

Looking at the supply side, the situation is definitely expansionary. Portugal's accomplishments in the international market have attracted the attention of a number of countries looking to new products to bolster their export earning capabilities. Processing tomatoes have already become an active candidate for expansion, especially in the nearby countries of the Mediterranean area where irrigation has opened up new land to cultivation.

A new irrigation project in western Spain—in the so-called Badajoz area next to the Portuguese border—has activated new potential for processing tomatoes. Several moderately large plants have been built and are geared heavily to production of tomato paste. Here, labor and raw-product costs closely resemble those in Portugal. Another relatively new area for paste production in Spain is developing in the Provinces of Logrono and Navarra in the northern part of the country next to the French border. A tomato processing industry is also being established in north Africa, particularly Morocco and Tunisia, as well as in Greece and Israel.

Many other countries throughout the world also are becoming increasingly active in production of processing tomatoes. Among the more prominent producers expanding their output at the present time are France, Bulgaria, Romania, Hungary, the Republic of South Africa, and Mexico.

The increasing tempo of world competition is exemplified by imports of tomato paste into the United States. In retrospect, Portugal's ascendancy in the world market was facilitated, in large part, by events in the U.S. producing scene. The momentary uncertainties which shrouded California's future in tomato paste production following the termination of the Bracero program in 1964 and the subsequent acceleration in finished-product prices paved the way for foreign penetration of the North American market. Though the shortage of harvest labor has since been resolved through use of the mechanical harvester, prices have continued high— partly a reflection of the vibrant demand in the U.S. market.

This setting has given considerable impetus to the demand for imported paste and has generated interest in the U.S. market on the part of other suppliers. Though Portugal continues to have a commanding lead, the number of other foreign suppliers has increased dramatically. During the first 10 months of 1967, a total of 18 countries were supplying the U.S. market for tomato paste, compared with only 4 a decade ago. The 1967 tally (January-October) by country and volume is as follows:

Origin	*1,000 pounds*
Angola [1]	1,945
Argentina	127
Canada	172
France	4,442
Greece	4,669
Israel	318
Italy	22,123
Japan	39
Korea, Rep. of	60
Mexico	10,010
Morocco	148
Mozambique [1]	22
Poland	274
Portugal	45,611
South Africa, Rep. of	2,078
Spain	5,176
Tunisia	24
Yugoslavia	1,947
Total	99,185

[1] Provinces of Portugal. All foreign exchange earnings accrue to the Bank of Portugal in Lisbon.

As noted previously, Italy's supremacy in the world market for tomato products has been subjected to a high degree of competition in recent years. Though it continues as the world's leading supplier of canned whole tomatoes, Italian exports of this product are facing increasing competition from a number of countries, particularly Spain and Bulgaria, who enjoy a comparative advantage in labor and raw-product costs over Italy. To counter this adverse situation, the Italian Government recently initiated steps to grant refunds on exports of Italian tomato products.

A Ministerial decree, published in late September 1967, provided for a refund amounting to 15 percent of the invoiced value on canned tomato paste and 18 percent on canned tomatoes. In the case of tomato paste, exports to seven countries are eligible: The United Kingdom, the United States, Canada, Switzerland, Denmark, Norway, and Sweden. Exports of canned tomatoes to three countries, namely the United Kingdom, the United States, and Canada, are eligible. A 16-percent refund on exports of tomato juice applies only to shipments to the United Kingdom. In all instances, maximum restitutions were stipulated.

The decree further provided that the refund shall be retroactive to January 1, 1967, and will continue through December 31, 1969.

Although Portugal has made some inroads into the market of the European Economic Community, Italy will shortly enjoy duty-free treatment by virtue of its membership in the Community. As soon as the full transition to the EEC's common external tariff is completed (expected on July 1, 1968), third countries, including Portugal, will face an import duty of 18 percent ad valorem on both tomato paste and canned whole tomatoes.

France, another member of the Community, has also taken steps to assist its exports of tomato paste. FORMA, a government organization responsible for the stabilization of prices of many farm products, has authorized an export restitution equivalent to 2 U.S. cents per pound on shipments to third countries.

Conclusion

Looking to its future, there is no doubt that the nucleus for further substantial growth does exist in Portugal. Though there will be physical limitations, irrigation stands ready to open up new areas to cultivation of processing tomatoes. Barring any local disturbances, it is entirely conceivable that output of paste could reach 200,000 metric tons within the next few years.

The impending adversities identified in the preceding section of this report offer challenges anew. There is good reason to believe that Portuguese canners will make every effort to meet these challenges and sustain their commanding position in the international paste market. The overall margin of profit appears momentarily sufficient to permit a scaling of prices to meet competition. Then, too, action on the part of the Portuguese Government, similar to that recently taken by the Government of Italy, is entirely within the realm of probability.

Insofar as competition from other areas currently in the stages of developing tomato processing industries is concerned, much remains to be done in the way of grower education and processing controls and techniques. Should these countries eventually acquire the skills and market reputation characteristic of the Portuguese industry the situation could alter appreciably.

Appendix

An unofficial translation of Portugal's current regulations relating to the classification of tomatoes for processing follows.

The objective of the present regulations is to establish the basis for the classification of red variety tomatoes (Lycopersicum esculentum) destined for the tomato concentrate industry.

I. **Quality.**

Tomatoes destined for the tomato concentrate factories will be classified as follows:

A. First or extra quality.

Well ripened fruit with an intense red color, characterized by complete maturity covering at least 90 percent of the fruit, of firm texture, whole tomatoes and without "pedunculos" (vine attachments) and calises.

The presence of some insignificant defects or discoloring is permitted.

B. Second or current quality.

Ripened fruit, with a clear red color covering at least 70 percent of the fruit, and of firm texture. The presence of penduculos and calises on up to 10 percent of the fruits is tolerated. The defects admitted for first quality are also allowed, together with insect, sun, and other damages not requiring the removal of over 30 percent of the weight of the fruit.

C. Rejects.

Fruits not meeting the minimum characteristics established for the second quality.

Note: The minimum limit of the red color established for first quality fruit corresponds to No. 46 on the "AGTRON" color scale. The minimum limit for second quality fruit corresponds to No. 67 on the "AGTRON" scale.

II. **Receipt of Lots, Sampling, and Classification.**

Samples will be collected for lots received in the

proportion of at least 1 in 50, but never less than 2 samples (boxes).

The fruits in the boxes selected for sampling will be mixed so as to obtain an average lot and from this, a subsample of 20 to 25 kilograms from which the classification will be made.

The factory has the right to refuse to accept any lot when it does not contain at least 30 percent of the first quality tomatoes or when rejects exceed 10 percent.

The following is an unofficial translation of the regulations governing the processed tomato products.

Conditions that the processors of tomatoes must observe in the preparation of processed products when they are destined for export:

I. **Types and Qualities.**

Processed tomatoes must be obtained exclusively from the fruits of tomatoes (Solanum lycopersicum, L.) except for the admission of special additives, condiments, and aromatic herbs or other vegetable products which give seasoning or color, but these additives cannot exceed 0.5 percent in quantity.

The addition of coloring is permitted only within legal limits and requires that the containers or cans carry a "color added" marking.

The following classes are considered for processed tomatoes to be exported:

A. Conserved whole tomatoes.

The fruits of appropriate varieties that are conserved in whole or in pieces must have good general appearance and good color. Two types of products may be prepared in this class:

1. Tomatoes with skins.
2. Tomatoes without skins (peeled).

Both types must be sterilized at a convenient temperature and conserved in closed containers. A small quantity of salt that cannot exceed 5 percent and a small portion of sugar are permitted.

B. Concentrated tomato juice and pulp.

These must be from ripe tomatoes, not fermented, in various concentrations, with or without the addition of a small quantity of salt that cannot exceed 3 percent.

The various concentrations that correspond to the designated products are as follows:

1. *Tomato juice*—a product of ripe tomatoes, not concentrated, but sterilized and containing plenty of pulp. The dry extract must not be less than 5 percent.

2. *Tomato pulp*—when the dry extract is not less than 12 percent.

3. *Simple tomato concentrate*—when the dry extract is not less than 18 percent.

4. *Double concentrate of tomato or tomato extract*—when the dry extract is not less than 30 percent.

5. *Triple concentrate of tomato*—when the dry extract is not less than 40 percent.

6. *Powdered tomatoes*—a product prepared from the greatest dehydration of tomatoes and pulverized.

C. *Conserved pulp of fermented tomatoes.*

These are from ripe tomato pulp that *after fermentation* is drained and a convenient quantity of salt added as a conservative. The following types are considered in this class:

1. *Fermented tomato juice*—has a fluid paste aspect, with a dry extract not less than 5 percent and salt not in excess of 18 percent.

2. *Fermented tomato paste*—has the consistency of a paste, with a dry extract not less than 10 percent and salt not in excess of 15 percent.

In relation to all types of conserved tomatoes, the indicated percentages of dry extract do not include the salt when it is added as a conservative. A tolerance of 10 percent of the indicated percentages of dry extract and salt is permitted.

D. *Special tomato products.*

The juice, pulp, or concentrates of tomatoes may be used to prepare special products with the addition of vinegar, salt, spices, sugar, etc.

The addition of spices, condiments, aromatic herbs, or other vegetable products in quantities superior to 0.5 percent necessitates an indication of this to the recipients or the creation of commercial designations approved by the National Fruit Board when they do not fit under any of the previously indicated designations.

Permission for factories to export such products is subject to registration of the respective trade mark.

II. **Packaging.**

Conserved tomatoes and products can be exported only in containers approved by the National Fruit Board.

All containers must have affixed, in easily readable letters:

A. the quality designation.
B. the concentration.
C. the gross or liquid weight.
D. the name of the processor.
E. the designation of the origin as Portuguese by means of the word "Portugal" in permanent fashion on the label or the container itself.

The use of trademarks and designations of national or foreign buyers is permitted, with the exclusion of the name of the processor, if the labels or containers include an assigned number or private indication of the processor that is registered with the National Fruit Board.

III. **General Dispositions.**

Before any exportation of conserved tomatoes can take place, the exporter must request commercial verification of the product from the National Fruit Board

by a letter in which is indicated the destination of the product, the number of units by trademarks, the size of the containers, the gross and liquid weights, the quality designation, and the name of the processor, which should be registered with the National Fruit Board under the terms of No. 3 of Portaria No. 10:394.

The control of the products destined for export will be as follows:

A. The commercial verification of the quality will examine the taste, smell, color, and concentration of the product and the containers to see that the items stipulated in regulations in force are indicated and will collect samples for analysis when judged necessary.

B. Periodically, samples will be collected from the processors for analysis by the laboratory of the National Fruit Board, and the processors instructed in accordance with the results of the analysis.

PORTUGAL: TOMATO ACREAGE AND PRODUCTION

Year	Planted acreage		Production	
	Hectares	*Equiv. acres*	*Metric tons*	*Equiv. short tons* [1]
1956	930	2,298	23,400	25,800
1957	1,100	2,718	32,600	35,900
1958	1,968	4,863	62,500	68,900
1959	1,440	3,558	46,000	50,700
1960	2,180	5,387	67,400	74,300
1961	3,580	8,846	89,700	98,900
1962	4,440	10,971	149,700	165,000
1963	5,300	13,096	191,400	211,000
1964	7,500	18,533	268,500	296,000
1965	10,850	26,810	450,000	496,000
1966	15,800	39,042	575,000	633,800
1967 [2]	19,691	48,656	790,000	870,800

[1] Rounded to nearest 100 tons. [2] Preliminary.

PORTUGAL: EXPORTS OF TOMATO PASTE [1]

Country of destination	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
Canada	181	450	13	22	397	5,179	770	1,684	3,320	10,853	23,395
United States	77	—	132	—	758	1,565	3,353	12,282	13,124	20,509	33,944
Europe:											
EFTA:											
Austria	—	—	—	—	—	7	—	—	—	84	121
Denmark	423	657	342	884	917	719	953	1,424	1,301	1,746	2,158
Norway	752	813	1,063	2,707	2,421	2,776	2,522	3,667	3,880	4,398	4,264
Sweden	27	18	4	29	42	64	126	498	1,001	1,709	1,660
Switzerland	—	—	—	—	190	179	260	170	822	2,365	1,409
United Kingdom	5,551	8,102	6,250	9,367	14,012	11,598	15,598	35,388	43,971	59,742	77,668
Total EFTA	6,753	9,590	7,659	12,987	17,582	15,343	19,459	41,147	50,975	70,044	87,280
EEC:											
Belgium-Lux	4	9	24	218	370	604	260	509	1,170	3.078	2,694
France	—	110	128	490	66	165	—	2,315	1,995	5,015	875
Germany, West	258	483	22	666	333	1,212	626	2,037	4,698	12,163	5,135
Italy	—	—	—	—	—	—	—	1,543	—	—	441
Netherlands	2	130	5	119	2	161	143	102	1,129	2,255	2,436
Total EEC	264	732	179	1,493	771	2,142	1,029	6,506	8,992	22,511	11,581
Other Europe	267	238	207	983	192	661	432	855	935	1,268	1,550
Total Europe	7,284	10,560	8,045	15,463	18,545	18,146	20,920	48,508	60,902	93,823	100,411
Overseas territories	306	172	373	723	483	560	2	9	31	93	902
Other countries	115	139	185	110	4,118	6,794	1,113	926	3,034	686	3,871
Grand total	7,963	11,321	8,748	16,318	24,301	32,244	26,158	63,409	80,411	125,964	162,523

[1] Exports are in terms of gross weight (including weight of container).

UNITED STATES: IMPORTS OF TOMATO PASTE AND SAUCE[1]

Country of origin	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
Argentina	56	51	9	8	—	—	—	—	—	—	88
Bulgaria	—	—	—	—	—	7	—	—	—	—	2
Canada	—	—	62	—	—	183	—	—	—	5	168
France	—	56	—	5	—	5,557	3,401	706	94	—	498
Greece	—	—	60	—	—	2	37	1	143	116	1,670
Italy	6,304	4,419	7,442	7,121	8,185	23,170	25,485	15,593	10,408	9,755	15,625
Mexico	2,731	—	—	10	320	3,675	5,022	6	160	1,899	7,080
Portugal	47	—	27	55	437	4,603	1,401	1,861	1,928	9,117	21,084
South Africa	32	—	—	—	—	—	—	—	—	575	2,007
Spain	8	13	47	—	33	1,177	327	313	439	2,554	1,747
Other	—	—	1	7	2	9	11	9	1	45	69
Total	9,178	4,539	7,648	7,206	8,977	38,383	35,684	18,489	13,173	24,066	50,038

[1] Imports for consumption.

UNITED KINGDOM: IMPORTS OF TOMATO PUREE, PASTE, AND PULP

Country of origin	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
Bulgaria	44	740	122	526	1,334	2,524	3,639	2,964	3,754	5,217	7,002
Commonwealth[1]	915	1,151	83	33	69	93	6	160	318	164	833
Czechoslovakia	6	675	225	139	835	395	565	5	(2)	(2)	(2)
France	8,505	5,605	8,336	3,533	6,172	547	3,007	498	22	473	1,848
Greece	488	351	259	(2)	(2)	(2)	(2)	(2)	374	874	347
Hungary	294	477	417	845	2,136	2,370	3,461	2,227	3,752	2,444	3,622
Italy	79,354	48,960	70,925	80,399	69,889	75,505	71,169	66,319	37,616	36,391	32,644
Portugal	4,785	8,073	5,805	10,138	12,406	10,749	14,564	33,831	43,113	66,965	82,000
Romania	(2)	(2)	(2)	(2)	(2)	1	301	140	374	(2)	(2)
South Africa	6	179	52	7	114	5	703	1,309	123	455	2,009
Spain	686	1,887	1,646	780	2,310	1,447	2,583	5,637	6,095	3,884	12,333
United States	(2)	(2)	(2)	(2)	1	62	1,456	1,367	199	291	710
Other	764	1,038	692	218	418	419	523	507	1,671	1,622	1,092
Total	95,847	69,136	88,562	96,618	95,684	94,117	101,977	114,964	97,411	118,780	114,440

[1] Excludes South Africa. [2] Imports, if any, included in "other."

CANADA: IMPORTS OF TOMATO PASTE

Country of origin	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
Argentina	—	39	—	—	—	—	—	—	—	—	24
Australia	—	—	22	—	—	—	—	—	—	—	—
Bulgaria	—	—	—	4	—	—	—	5	—	—	22
Cuba	—	—	—	—	—	—	—	—	—	—	15
France	1,253	—	—	—	—	219	1	9	—	—	—
Greece	7	5	17	34	56	188	128	121	67	100	274
Italy	15,069	15,468	13,082	5,681	8,563	8,929	11,648	11,099	5,162	4,738	7,444
Leeward & Wind. Is.	—	—	—	—	—	220	289	73	—	—	—
Mexico	—	—	—	—	—	44	7	—	—	—	643
Netherlands	—	1	—	—	—	—	—	—	—	—	—
Portugal	181	444	13	22	694	1,640	3,824	11,424	6,709	22,627	31,757
South Africa	—	—	—	—	—	—	—	—	—	329	238
Spain	5	561	724	396	335	432	216	—	318	1,258	430
United States	12,387	15,998	8,160	10,918	11,060	8,609	7,217	12,210	8,041	10,903	6,765
Total	28,902	32,516	22,018	17,055	20,708	20,281	23,330	34,941	20,297	39,955	47,612

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